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ABSTRACT

The morphological structure of the nouns in Yupik Eskimo is highly complex. Past attempts at its classification are recapitulated, and a new analysis is proposed within the theoretical framework of generative phonology. The new classification is informative: it reveals the innate structures underlying the various noun types, and also provides insights into historical and dialectal variants of the language. Furthermore, the seven traditional noun classes have been reclassified and simplified into two major types with few minor exceptions. What appears to be a highly complex linguistic structure is revealed as an intrinsically simple system of underlying forms and recurrent phonological processes.
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YUPIK ESKIMO NOUN CLASSES*

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INTRODUCTION

The noun classes of Western or Yupik Eskimo have been classified by John Hinz (1944). It is his contention that these nouns can be adequately accounted for if they are reformulated into eight separate noun classes. The basis for his classification is evident in the following statements:

CLASS ONE

The nouns of this class all terminate in a vowel, specifically [a], [e] or [o]. The mid vowels, viz. [e] and [o], alternate with high vowels [i] and [u] respectively, according to a special rule.[1]

	Obj-sgl[2]	Subj-sgl	Dual	Plural
"land	[nuna]	[nunam]	[nunak]	[nunat]
"reindeer"	[tunto]	[tuntum]	[tuntuk]	[tuntut]
"wound"	[ike]	[ikim]	[ikik]	[ikit]

CLASS TWO

These nouns all end in either a velar obstruent [k] or an uvular obstruent [q] in the subjective case. In some cases there is a concomitant vowel length in the dual and plural forms.

"kayak"	[qayaq]	[qayam]	[qayak]	[qayat]
"skin"	[ameq]	[amim]	[amik]	[amit]
"oil"	[oqoq]	[oqum]	[oquk]	[oqut]
"person"	[yuk]	[yum]	[yuk]	[yut][3]
"ocean"	[imaχpik]	[imaχpim]	[imaχpik]	[imaχpit][4]

CLASS THREE

The nouns in this class change the final nasal [n] of the objective case to an oral obstruent [t] before the number and case endings [m], [k] and [t]. Then an epenthetic vowel [i] is inserted between the stem final and the suffixes.[5]

"man"	[aŋun]	[aŋutim]	[aŋutik]	[aŋutit]
"cup"	[megun]	[megutim]	[megutik]	[megutit]
"gift"	[tsikiun]	[tsikiutim]	[tsiiiutik]	[tsikiutit]

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CLASS FOUR

Nouns in the fourth class are similar to those in the first class in that they end in a vowel. However, this is where the similarity ends. This final vowel is limited to the low vowel [a], and it alternates with the high front vowel [i] in the dual, the plural, and the subjective singular.[6]

	Obj-sgl	Subj-sgl	Dual	Plural
"fish"	[neqa]	[neqim]	[neqik]	[neqit]
"servant"	[pista]	[pistim]	[pistik]	[pistit][7]
"dog"	[qimuxta]	[qimuxtim]	[qimuxtik]	[qimuxtit][8]

CLASS FIVE

All the nouns in this class end with the uvular stop [q] in the objective singular. This sound is changed to a uvular fricative [ɣ], and then the suffixes [im], [ik], and [it] are added.[9]

"mouth"	[qaneq]	[qaneɣim]	[qaneɣik]	[qaneɣit]
"water"	[meq]	[meɣim]	[meɣik]	[meɣit]
"fire"	[qineq]	[qineɣim]	[qineɣik]	[qineɣit]

CLASS SIX

All of the nouns in this class end with the velar stop [k] in the objective singular. These nouns function in a manner which is similar to that of the class five nouns. The velar obstruent [k] undergoes lenition to [g], and then the suffixes [im], [ik], and [it] are added.[11]

"bird"	[yakulik]	[yakuligim]	[yakuligik]	[yakuligit]
"river"	[kuik]	[kuigim]	[kuigik]	[kuigit]
"meat"	[qimik]	[qimigim]	[qimigik]	[qimigit]

CLASS SEVEN

The nouns of class seven end with the sounds [lak], [ɣak], and [sak] in the objective singular case. These nouns drop the ending [ak] in the dual, the plural, and the subjective singular, and then the suffixes [im], [ik], and [it] are attached to the new forms.[12]

"heaven"	[qilak]	[qilim]	[qilik]	[qilit]
"wood"	[moɣak]	[moɣim]	[moɣik]	[moɣit]
"boot"	[kamiksak]	[kamiksim]	[kamiksik]	[kamiksit]

CLASS EIGHT

The nouns of this class end in [teq] or [ɬeq] in the objective singular. The vowel [e] is lost, and [q] is changed to [ʂ], and then the suffixes [im], [ik], and [it] are added.

	Obj-sgl	Subj-sgl	Dual	Plural
"name"	[ateq]	[atʂim]	[atʂik]	[atʂit]
"floor"	[nateq]	[natʂim]	[natʂik]	[natʂit]
"deceased"	[toquɬeq]	[toguɬʂim]	[toquɬʂik]	[toquɬʂit]

Most of our comments about this classification have been predicated on the assumptions of generative phonology. Therefore, it is not surprising that our criticisms were based on a system in which independently motivated rules and abstract underlying representations play a major role. Since Hinz wrote his linguistic description almost two decades prior to the advent of generative phonology, we cannot hold him accountable for these linguistic principles. Our reanalysis is best understood as an attempt to subject his original analysis and our own field data to further scrutiny in the hope that eventual reduction and generality will develop. Regularization of the data is of prime importance in a linguistic reanalysis, and herein lies the value of his work. His eight noun classes are already a step toward that goal. Our immediate task is one of amelioration.

NEW PERSPECTIVES

There are many questions about the data that Hinz failed to answer. In the first place, he was not consistent about the morphological shape of the dual, plural, and the subjective singular forms. Consider, for example, the possibilities suggested by the plural morphemes.

	Singular	Plural
"land"	[nuna]	[nunat]
"water"	[meq]	[meʂit]
"meat"	[qimik]	[qimiʂit]
"floor"	[nateq]	[natʂit]

Since the phonetic manifestations of the plural alternate between [t] and [it] this means that the plural marker could be derived from an underlying /t/ or /it/. If we choose the former, then we must explain the addition of the high front vowel [i] among the fricative stem plurals such as [qimiʂit]. If we choose the latter, then we must explain the loss of the same vowel in such vocalic stems as [nunat]. However, other forms of the plural do not lend themselves quite so readily to either analysis.

	Singular	Plural
"oil"	[oqoq]	[oqut]
"sky"	[qilak]	[qilit]
"food"	[neqa]	[neqit]

Evidently these factors must be seriously discussed in our investigation of the process of plural formation in Yupik Eskimo.

The second area of investigation which requires closer scrutiny is that of lexical stratification. We are not enlightened about the function of loan words, native vocabulary, vestigial forms, etc. in our perusal of Hinz. Lexical stratification is important because the phonological processes of Yupik Eskimo are sensitive to the manner in which lexical items are subclassified. As a case in point, consider the rule of vowel raising. This rule changes a low vowel [a] into a high vowel [i] in closed syllable position.

"dog"	[qimuxta]
"two dogs"	[qimuxtik]
"like a dog"	[qimuxtitun]

These forms suggest that we need the following rule.

VOWEL RAISING: [a] → [i] / ___ + C

However, it should be noted that when we attempt to apply this rule we find that its applicability needs to be constrained.

"land"	[nuna]
"two lands"	[nunak]
"lands"	[nunat]

Both [qimuxta] and [nuna] belong to the native core vocabulary of Yupik Eskimo, but the process of vowel raising is only operative in [qimuxta]. Furthermore, it never occurs in the new acquisitions to the lexicon. This is due to the fact that it was once a productive process, but now only remains as a relic of the past. This evidence is clear from the comparative and historical evidence (Munns, 1970; Jenness, 1928). If we did not invoke the concept of lexical stratification, then we could not adequately characterize these linguistic facts.

A third area of interest that was overlooked by Hinz is that of the suffixes of the possessive paradigm. When these forms are employed as an adjunct to our reanalysis they provide us with a new perspective which further enhances a regularization of the data. In order to understand this better let us consider the third person possessives in more detail. In English we normally express the plurality of a noun by means of a suffixed morpheme:

book,	books

When these nouns represent objects which someone possesses, then we differentiate between one or more possessives by means of genitive singular and plural personal pronouns:

his book,	his books
their book,	their books

In Eskimo both the plurality of the noun and the plurality of the possessor are expressed by means of nominal suffixes. Consider, for example, the plural suffixes of [ataneq] "ruler."[13]

"his ruler"	/ata+nix+a/	[atanega]
"his rulers"	/ata+nix+i/	[atanege]
"their ruler"	/ata+nix+a+t/	[atanegat]
"their rulers"	/ata+nix+i+t/	[atanegit]

It is evident from these forms that the number of the possessed noun is marked by the suffix /a/ in the singular, and /i/ in the plural, and the number of the possessor is marked by /t/ in the plural, and it is unmarked in the singular.

	POSSESSOR	
	Singular	Plural
	Ø	t
POSSESSED		
Singular /a/	N+a+Ø	N+a+t
Plural /i/	N+i+Ø	N+i+t

These suffixes are important because of the fact that they interact with the nouns of Yupik Eskimo, and this interaction is different from that of the non-possessive dual and plural suffixes. Hence, they are highly instrumental in enabling us to establish new noun classes.

CONSONANT DELETION STEMS
"kayak" [qayaq]
"his kayak" [qayaa]

FRICATIVE STEMS
"mouth" [qaneq]
"his mouth [qanega]

SYNCOPE STEMS
"name" [ateq]
"his name" [atga]

VOWEL STEMS
"wound" [ike]
"his wound" [ikia]

VOWEL RAISING STEMS
"father" [ata]
"his father" [atee]

NASALIZED STEMS
"ear" [tsiun]
"his ear"[tsiutee]

Now that we are cognizant of the various lacunae in the analysis by Hinz of Yupik Eskimo, we shall proceed to regularize his data in conjunction with our own. We shall accomplish this by means of independently motivating and substantiating the general phonological processes which are operative among the nouns of Yupik Eskimo. In addition, we shall provide linguistic evidence in favor of our abstract phonological representations.

NATURE OF THE REANALYSIS

When Hinz divided the nouns of Yupik Eskimo into eight noun classes, he based his classification on the phonetic properties of the noun stem finals. He noted that some nouns ended with a vowel, some were subject to phonological alternations and some were not. Similarly, some stem final obstruents were retained, and others were not. Of those that remained, however, some participated in phonological alternations, while others were invariant. We shall attempt to explain each of these facts separately in order to ascertain what role they play in regularizing the data. Instead of using Hinz' numerical system we have assigned them a classification which is mnemonic.

THE CONSONANT DELETION CLASS

There is a large class of nouns in Eskimo that end in a voiceless stop in word final position, but this stop is lost before a vocalic or consonantal suffix. These properties are evident in the following data.

NON-POSSESSIVE FORMS

"kayak"	[qayaq]
"kayaks"	[qayat]

POSSESSIVE FORMS

"his kayak"	[qayaa]
"his kayaks"	[qayai]
"their kayak"	[qayaat]
"their kayaks"	[qayait]

Our immediate concern is to arrive at an adequate description of the possessive forms of the nouns of this class. What this entails is quite simply a phonologically plausible explanation for the loss of a stop in intervocalic position, and its retention as a voiceless stop in word final position. A likely candidate for this description is that of a voiced stop. We arrived at this conclusion on the basis of our reliance on "natural rules." We have clear evidence from languages such as German, for example, that the devoicing of a stop in final position is a common phonological process. Similarly, Spanish and Portuguese both provide us with evidence that the loss of a voiced stop in intervocalic position is a natural phenomenon. Therefore, on the basis of these assumptions we can surmise that the logical form which underlies the surface variant [qayaq] "kayak" is /qayag/. Miller (1969) has provided

evidence that this is also the historically correct form. His conclusion was based on a reanalysis of the Prince of Wales dialect of Yupik Eskimo where labial and uvular stops leave a phonetic trance on their surrounding vowels prior to consonant deletion. Given the underlying form /qayag/, we can derive the phonetic variants of the language by means of the following schema.

	/qayaġ/	/qayaġ+a/	/qayaġ+a+t/
C Devoicing	qayaq	-	-
C Deletion[14]	-	qaya+a	qaya+a+t
	[qayaq]	[qayaa]	[qayaat]

There is a small subclass of consonant deletion nouns which differ from those previously mentioned in that they undergo vocalic alternations. The forms of [ameq] "skins" is exemplary of this subclass.

NON-POSSESSIVE FORMS

"skin"	[ameq]
"skins"	[amit]

POSSESSIVE FORMS

"his skin"	[amia]
"his skins"	[amee]
"their skin"	[amiat]
"their skins"	[amiit]

The process that differentiates [ameq] "skin" from [qayaq] "kayak" is that of vowel lowering. This is a rule that lowers high vowels to mid vowels before uvular obstruents. This can be clearly seen in the derivations of [oqoq] "seal oil" and [ameq] "skin."

	/uqug/	/uqug+a/	/amig/	/amig+a/
C Devoicing	uquq	-	amiq	-
C Deletion	-	uqu+a	-	ami+a
V Lowering[15]	oqoq	oqu+a	ameq	-
	[oqoq]	[oqua]	[ameq]	[amia]

The rationale for this rule comes to us from articulatory phonetics. Under the current system of articulatorily-oriented classificatory features (Chomsky and Halle, 1968) velar and uvular consonants differ in height.

	[k]	[q]
high	+	-
low	(-)	(-)
back	(+)	(+)

Therefore, when a high vowel is lowered to a mid vowel before a uvular stop, this can be viewed as progressive assimilation since mid vowels and uvular stops are both [-high], and high vowels and velar stops are both [+high]. This fact can be incorporated into the following rule.

VOWEL LOWERING

$$\overset{V}{[+\text{high}]} \rightarrow [-\text{high}] \; / \; \underline{\quad} \; \overset{C}{\begin{bmatrix}-\text{high}\\-\text{ant.}\end{bmatrix}}$$

There is another situation under which vowel lowering takes place, and this is in word final position. In the following data the rule operates only on geminate high vowels.

Lowering

/amig+i/	[amee]

Non-lowering

/amig+i+t/	[amiit]
/qayag+i/	[qayai]

These facts suggest that we need a second rule of vowel lowering. Unfortunately this new rule has no obvious articulatory basis, but it must be included since it forms an intrinsic part of the phonology of Yupik Eskimo.

GEMINATE VOWEL LOWERING[16]

$$[+\text{high}]_{[\alpha\text{back}]}, [+\text{high}]_{[\alpha\text{back}]}, \# \rightarrow [-\text{high}], [-\text{high}], \#$$

1 , 2 , 3 1 , 2 , 3

The effect of this rule can be seen in the following derivation.

	/amig+i/	/amig+i+t/
C Deletion	ami+i	ami+i+t
GV Lowering	ame+e	-
	[amee]	[amiit]

It is quite common in generative phonology to combine or conflate phonological rules when they are contiguously ordered, and when they share a structural description (Kiparsky, 1968). This claim, which is normally made in the name of simplicity, raises the question about whether or not the two rules of vowel lowering can be conflated into one general rule. Such a hypothesis can not be seriously entertained in our phonology since

both rules differ in form as well as in function. The rule that lowers a vowel before a uvular stop is an assimilatory rule, whereas the one that lowers geminate vowels has an obscure origin and a doubtful function. Nevertheless, the question still remains because Kisseberth (1969, 1970) has argued that rules may be united in function when they conspire to derive the same phonetic output. He bases his contention on Kuroda's reanalysis of Yawelmani (Kuroda, 1967) where tri-consonantal clusters are prevented by means of the following rules.

EPENTHESIS

$$\emptyset \longrightarrow V \;/\; C __ CC$$

C DELETION

$$C \longrightarrow \emptyset \;/\; CC + __$$

On the surface both of these rules are quite dissimilar, but on a functional level they are equivalent. If Kisseberth's claim is true for all languages, it would mean that there could be a conspiracy in Eskimo to lower final high vowels. This conspiracy, however, would have to fail because of the antithetical nature of the following examples.

"reindeer" /tuntu/ [tunto]
"his reindeer (pl)" /tuntu+i/ [tuntue]

VERSUS

"kayak" /qayag/ [qayaq]
"his kayaks" /qayag+i/ [qayai]

Evidently, the form qayai provides a strong counter example to the conspiracy hypothesis in Eskimo as there is no rule which lowers the final vowel of [qayai] to *[qayae].

The only aspect of the consonant deletion stems that we have not discussed is that of the non-possessive suffixes such as the dual, plural, and the subjective singular. These will be discussed in toto under the rubric of the phonology of the Yupik plurals.

THE FRICATIVE NOUN CLASS

In the fifth and sixth noun classes described by Hinz there were consonantal alternations between voiceless stops and voiced fricatives. The voiceless stops occurred in stem final position, whereas the voiced fricatives were only found in intervocalic position. Both noun classes displayed this variation. The only difference between them is that one had a stem final voiceless velar stop and the other had a stem final voiceless uvular stop.

NON-POSSESSIVE FORMS

"mouth" [qaneq]
"mouths" [qanegit]

POSSESSIVE FORMS

"his mouth"	[qanega]
"his mouths"	[qanege][17]
"their mouth"	[qanegai]
"their mouths"	[qanegait]

NON-POSSESSIVE FORMS

"river"	[kuik]
"rivers"	[kuigit]

POSSESSIVE FORMS

"his river"	[kuiga]
"his rivers"	[kuige]
"their river"	[kuigat]
"their rivers"	[kuigit]

Once again we must ask ourselves about the rationale behind these alternations. It appears that the underlying stem final obstruent is either a stop or a fricative. If it were a stop it would have to be voiceless since the voiced stops have already been relegated to the consonant deletion noun class. And if it were a fricative it would have to be an underlying voiceless fricative since linguistic tradition dictates that there is no language in which voiced obstruents can exist unless there are also underlying voiceless obstruents (Jakobson, 1962; Greenberg, 1964; Chomsky and Halle, 1968). The possibility of underlying voiceless stops is ruled out because they are invariant, i.e. all non-alternating obstruents are underlying voiceless stops. This means, then, that the nouns of this class end in a voiceless fricative. Hence, the underlying form of [qaneq] "mouth" is /qanix/, and the underlying form of [kuik] "river" is /kuik/.

Given the fact that the nouns of the fifth and sixth noun class end with underlying fricatives, this means that we must invoke two new rules in order to account for their phonetic variations. One is a rule of despirantization, and the other is a rule of lenition. The former changes a spirant into a stop in word final position, and the latter voices a spirant in intervocalic position.

One question that is immediately asked about such rules is whether or not they are natural rules, i.e. rules that operate on natural classes of sounds, and rules that are commonly attested in many of the languages of the world. Surely the voicing of fricatives in intervocalic position is not open to suspicion, but the rule that changes a fricative into a stop in word final position is. It has been pointed out by Werner Winter (personal communication) that although there are no clearly documented cases of such a rule in historical linguistics, it nevertheless is an interesting rule from the standpoint of markedness theory. It is well known, for example, that certain kinds of neutralization can take place in word final position (Trubetskoy, 1939), and that when such a process

occurs, it is always the unmarked member of the opposition that remains. Hence, if a voiced and a voiceless stop are neutralized in final position it is the voiceless stop that acts as the unmarked member, cf. German [bunte] and [bunde] which are both neutralized as [bunt] in the nominative singular. Now we must ask just what would happen if a voiceless fricative and a voiceless stop were to be neutralized in word final position. Reason dictates that if such a process were to occur, then it would be the voiceless stop which would act as the unmarked member of the opposition. The rationale behind this assumption is in keeping with Trubetskoy's use of the terms "marked" and "unmarked." When he called the voiced member of a consonantal opposition the marked member he meant that it possessed a "Merkmal," i.e. a feature which the unmarked member lacked. When we consider the difference between stops and fricatives, we notice that fricatives are strident, and stops are non-strident, or that fricatives are continuants, and stops are non-continuants. Therefore, this can only mean that the fricatives are the marked members of the opposition. Besides appealing to markedness theory we can obtain further justification for underlying fricatives from comparative data. There are dialects of Yupik Eskimo in which despirantization did not take place (cf. Nunivak in Jenness, 1928), and in such dialects voiceless fricatives occur in word final position, and voiced fricatives occur in medial position.

The derivation of the nouns of the fricative class is recapitulated as follows:

	/qa+nix/	/qa+nix+a/
Despirantization	qa+niq	-
Lenition	-	qa+niɣ+a
V Lowering[18]	qa+neq	qa+neɣ+a
	[qaneq]	[qaneɣa]

The derivation of the form [qanege] from an underlying /qa+nix+i/ is of special interest because it establishes the need for a third rule of vowel lowering.

VOWEL LOWERING (FINAL)

$$\overset{V}{[+high]} \longrightarrow [-high] \; / \; __ \; \#$$

Since this rule shares a structural description with our previous rule of vowel lowering, we can combine the two by means of the disjunctive rule convention (Chomsky and Halle, 1968).

VOWEL LOWERING (REVISED)

$$\overset{V}{[+high]} \longrightarrow [-high] \; / \; __ \; \begin{matrix}[-high] \\ [-ant]\end{matrix} \; / \; __ \; \#$$

The effect of this rule is demonstrated in the following derivation.

	/qa+nix/	/qa+nix+i/
Despirantization	qa+niq	-
Lenition	-	qa+niġ+i
V Lowering	qa+niq	qa+neġ+e
	[qaneq]	[qaneġe]

Comparative evidence provides further evidence for the claim that the vowel lowering rule has been generalized, viz. either dialects have both of these rules of lowering or they do not.

THE SYNCOPE NOUN CLASS

Hinz separated the nouns of class eight from those in classes five and six. The rationale behind this decision may have resulted from his interpretation of the fact that although the nouns of this class have much in common with those of the fricative class, they also undergo the process of vowel syncope. Consider the following data.

NON-POSSESSIVE FORMS

"name"	[ateq]
"names"	[ateġit], [atġit][19]

POSSESSIVE FORMS

"his name"	[atġa]
"his names"	[atġe]
"their name"	[atġai]
"their names"	[atġait]

Due to the similarity between the nouns of this class and those of the fricative class we can safely assume that the underlying form of [ateq] "name" is /atix/. Hence, the derivation of this form is predictable.

	/atix/	/atix+a/
Despirantization	atiq	-
Lenition	-	atiġ+a
Syncope	-	atġ+a
V Lowering	ateq	-
	[ateq]	[atġa]

Just how are we to differentiate those fricative nouns which permit syncopation from those which do not is a problem that we must eventually resolve. It appears that syncope is a function of speech rhythm. The non-syncopated forms occur in slow speech, and the syncopated

forms occur in fast speech. This observation is not in accord with that of Hinz, and this may be the result of dialectal variance. Hence, on the basis of our own data we find no need for a special class of nouns which share all of the characteristics of the fricative nouns except the process of syncope.

THE VOWEL STEM CLASS

There is a small number of nouns which end in a stem final vowel in Eskimo.

NON-POSSESSIVE FORMS

"reindeer"	[tunto]
"reindeer (pl)"	[tuntut]

POSSESSIVE FORMS

"his reindeer"	[tuntua]
"his reindeer (pl)"	[tuntue]
"their reindeer"	[tuntuat]
"their reindeer (pl)"	[tuntuit]

These forms can be adequately described by means of the rules that we currently have in our phonology. Hence, the following derivation.

	/tuntu/	/tuntu+a/	/tuntu+i/
V Lowering	tunto	-	tuntu+e
	[tunto]	[tuntua]	[tuntue]

What is interesting about the class one forms of Hinz, viz. [tuntue], is that it forces us to restate the rule of vowel lowering. The reason for this is that not all final high vowels are lowered. As we have already seen, geminate high vowels are lowered in word final position, cf. /amig+i/ which surfaces as [amee]. Another environment for vowel lowering is when a singular high vowel is lowered in word final position, cf. [tunto] from /tuntu/. The new condition of applicability must be changed so as to incorporate the fact that if and when a vowel such as [i] or [u] occurs in word final position, and it is also preceded by another vowel, then the high final vowel will not lower. But even this statement is not inclusive enough as witnessed by the following forms.

Vowel Lowering

/tuntu+i/ [tuntue]
/yug+i/[tue]

Non-Lowering

/qayag+i/ [qayai]
/nuna+i/ [nunai]

What these forms seem to demonstrate is that vowel lowering can occur if both of the final vowel sequences are geminate high vowels, but if the final high vowel is preceded by a non-high vowel, then it will not lower. Why such a rule should occur is beyond our comprehension, but it does describe the phonetic facts of the language. This leaves us with four different kinds of vowel lowering phenomena.

1. Lowering before uvular obstruents

   /uqug/ [oqoq]

2. Geminate high vowels

   /amig+i/ [amee]

3. Non-geminate high vowels

   /tuntu+i/ [tuntue]

4. Final singular vowel

   /tuntu/ [tunto]

What prevents these conditions from presenting a coherent system of functional unity (cf. Kisseberth 1969, 1970), is the exception to vowel lowering, viz. /qayag+i/ [qayai], and /nuna+i/ [nunai].

VOWEL RAISING STEMS

The following nouns were classified by Hinz as class one or vocalic stems, but they merit special subclassification.

NON-POSSESSIVE FORMS

"land"	[nuna]
"lands"	[nunat]

POSSESSIVE FORMS

"his land"	[nunee]
"his lands"	[nuneet]
"their land"	[nunai]
"their lands"	[nunait]

What makes these noun forms differ from those of the other vowel stems is that they undergo the process of vowel raising. This is evident in the following examples.

"his land" /nun+a/ [nunee]
"their land" /nuna+a+t/ [nuneet]

Evidently geminate low vowels are raised to mid vowels as the following derivation demonstrates.

	/nuna+a/	/nuna+a+t/
V Raising	nune+e	nune+e+t
	[nunee]	[nuneet]

The fact that some geminate low vowels are raised does not mean that all geminate low vowels undergo this process. As we have already seen the nouns of the consonant deletion class did not raise.

	/qayaġ+a/
C Deletion	qaya+a
V Raising	-
	[qayaa]

It appears that we can clarify this situation by means of rule ordering.

	/nuna+a/	/qayaġ+a/
V Raising	nune+e	-
C Deletion	-	qaya+a
	[nunee]	[qayaa]

Another variation to the vowel raising noun class can be found in those nouns which Hinz classified as his class seven nouns.

NON-POSSESSIVE FORMS

"large boat" [aŋiaχpak][20]
"large boats" [aŋiaχpiit][21]

POSSESSIVE FORMS

"his large boat" [aŋiaχpee]
"his large boats" [aŋiaχpai]
"their large boat" [aŋiaχpiit]
"their large boats" [aŋiaχpait]

Nearly all of the forms of this class can be derived with our present system of phonological rules.

	/aŋiaχ+pag/	/aŋiaχ+pag+a/
C Devoicing	aŋiaχ+pak	-
C Deletion	-	aŋiaχ+pa+a
V Raising	-	aŋiaχ+pe+e
	[aŋiaχpak]	[aŋiaχpee]

In our previous discussion of the derivation of [nunee] and [qayaa] we invoked the concept of rule ordering in order to constrain the process of vowel raising. The claim was made that underlying contiguous low vowels were raised, viz. /nuna+a/ [nunee], whereas derivationally contiguous low vowels were not, viz. /qayag+a/ [qayaa]. The form [aŋiaχpee] is derived from /aŋiaχ+pag+a/ and it provides us with counter evidence to our original claim. As a consequence we must resolve this ordering paradox by means of local ordering (Anderson, 1969). This means that the rules of consonant deletion and vowel raising apply in one linear order for certain lexical items, and in a reversed order for other items (St. Clair, 1973). The existence of such ordering paradoxes are best understood in the light of lexical borrowing. One order may have already existed as the unmarked order in the language, but when a new lexical item is borrowed it may require the reverse order.

The derivation of [aŋiaχpiit] from an underlying /aŋiaχ+pag+a+t/ presents us with still another problem of a descriptive nature. It raises the question as to whether or not vowel raising involves a change of low geminate vowels to high geminate vowels, i.e. [aa] to [ii], rather than a change of low vowels to mid vowels, i.e. [aa] to [ee] directly. The former hypothesis would have the following derivation in which high geminate vowels are subsequently lowered by means of an independently motivated rule of vowel lowering.

	/nuna+a/	/aŋiaχ+pag+a+t/
C Deletion	-	aŋiaχ+pag+a+t/
V Raising	nuni+i	aŋiaχ+pa+a+t/
V Lowering	nune+e	-
	[nunee]	[aŋiaχpiit]

It would appear that this appeal to local ordering of independently motivated rules would finally resolve the problem of vowel raising. However, this is not the case as the form [nuneet] demonstrates. We should expect /nuna+a+t/ to surface phonetically as [nuniit] in lieu of the attested form [nuneet][22]. This idiosyncrasy of the Kuskokwim dialect of Yupik Eskimo requires a special rule of lowering for /nuna+a+t/.

	/nuna+a/	/nuna+a+t/	/pi+s+ta+a+t/[23]
V Raising	nuni+i	nuni+i+t	pi+s+ti+i+t
V Lowering	nune+e	-	-
Special Rule	-	nune+e+t	-
	[nunee]	[nuneet]	[pistiit]

What these facts demonstrate is that the special rule of vowel lowering is by no means ad hoc since its function plays an intrinsic role in the dialect of Yupik Eskimo under discussion.

NASAL NOUN CLASS

Hinz set up a special class of nouns (class three) for those nouns which could be characterized as having a nasal consonant in stem final position, and a voiceless obstruent in intervocalic position.

NON-POSSESSIVE FORMS

"ear"	[tsiun]
"ears"	[tsiutit]

POSSESSIVE FORMS

"his ear"	[tsiutee]
"his ears"	[tsiutiit]
"their ear"	[tsiutai]
"their ears"	[tsiutait]

The nouns of this class are very interesting because of the intricate morphological alternations involved. The form [tsiutee], for example, demonstrates the fact that at some stage of the derivation it was derived from the form /tsiuta+a/ by means of vowel raising and subsequent lowering.

	/tsiuta+a/
V Raising	tsiuti+i
V Lowering	tsiute+e
	[tsiutee]

If we take /tsiuta/ as the underlying form for "ear," then we could adequately derive the following forms.

	/tsiuta+a+t/	/tsiuta+i/	/tsiuta+i+t/
V Raising	tsiuti+i+t	-	-
	[tsiutiit]	[tsiutai]	[tsiutait]

The real problem occurs in the non-possessive forms [tsiun] and [tsiutit]. We shall return to these under the rubric of the phonology of the Yupik plurals, but first let us investigate the nasal stems from a comparative point of view.

The phenomenon of nasal versus oral consonantal alternations is not restricted to the Kuskokwim dialect of Yupik Eskimo. It can be found in other dialects as the following comparative data show.

	Labrador/Greenlandic	Alaskan/Mackenzie River
Agentive case	-p	-m
Ablative sgl	-mit	-min
Ablative pl	-mut	-mun
Aequalis sgl	-kut	-kun
Aequalis pl	-tut	-tun
3rd person sgl	-t	-n
2nd person sgl	-it	-in

There appear to be two historical accounts of this phonetic correspondence of nasal and oral stops. Hammerich (1936) and Schultz-Lorentzen (1945) attribute this alternation to a tendency in Greenlandic to nasalize final stops when the following word begins with a vowel. This is especially true of West Greenlandic as Schultz-Lorentzen demonstrates with the following data:

kikkut uko [kikkun uko]	"Who are they?"
suut uko [suun uko]	"What are they?"
inuk aa [inuŋ aa]	"Son!"

Hammerich (1936) notes that this phonological process may have been common to all of the dialects of Eskimo, but now it is still active only in West Greenlandic. If this is true, then it would help us to explain why a small and unproductive class of Yupik Eskimo nouns still exhibits alternations between nasal and oral consonants. The second historical account for the nasal/oral correspondence in Eskimo comes from Boas (1911:985). He notes that in Baffin Land the old men from the east coast of Cumberland used oral stops quite regularly in word final position, but the women and the young men employed nasalized consonants in the same environment. Whether this sociolinguistic account is the result of a sound change or the cause of one is difficult to ascertain due to a lack of pertinent information.

Now that we have established that there is a basis for nasalizing final stops in Yupik Eskimo, let us return to the derivation of [tsiun] from an underlying /tsiuta/. So far we have seen that a noun stem may terminate in any one of three obstruents, i.e. a voiced stop /-pag/, a voiceless fricative /niɣ/, and a voiceless stop. What differentiates underlying voiceless stops from other obstruents is that they are invariant in relationship to consonant deletion or spirantization. These conditions adequately describe the intervocalic dental stop in /tsiuta/. Hence, we can incorporate this information in our analysis of [tsiun] by restricting the process of nasalization to stem final voiceless stops. However, in order for this to happen, the final vowel of /tsiuta/ must be deleted.

/tsiuta/

Apocope	tsiut
Nasalization	tsiun

[tsiun]

What this derivation shows is that the nasal stems of Yupik Eskimo are really nasalized stems.

THE PHONOLOGY OF THE YUPIK PLURALS

Now that we have made a detailed study of the possessive endings and their relevance to our task of ascertaining the noun classes of Yupik Eskimo, let us complete our investigation by analyzing the non-possessive forms. One of the first questions that we must ask about the non-possessive suffixes is whether or not the plural marker is /t/ or /it/.

VOWEL STEM PLURALS

We shall initiate our analysis of the plural marker with the vowel stem nouns because they provide us with clear evidence that the mark of the plural is /t/ and not /it/.

	Singular	Plural
"land"	[nuna]	[nunat]
"reindeer"	[tunto]	[tuntut]
"wound"	[ike]	[ikit]

The reason why the plural marker can only be /t/ is due to the fact that if it were /it/, then this would entail a rule of vowel truncation, viz.

/nuna+it/

V Truncation	nana+t

[nunat]

Such a rule cannot be allowed in our phonology, and this is evident from our previous discussion of the third person possessive suffix /a/ and the stem plural /i/.

"reindeer"	/tuntu/	[tunto]
"his reindeer"	/tuntu+a/	[tuntua]
"his reindeer (pl)"	/tuntu+i/	[tuntue]

These forms necessitate the following derivation.

	/tuntu/	/tuntu+a/	/tuntu+i/
V Lowering	tunto	-	tuntu+e
	[tunto]	[tuntua]	[tuntue]

If we were to admit a rule of vowel truncation in our system of rules, then it would incorrectly derive *[tuntu] or *[tunto] from an underlying /tuntu+a/ in lieu of the expected [tuntua]. Hence, the plural marker must be /t/ and not /it/.

FRICATIVE NOUN PLURALS

The non-possessive plurals of the fricative nouns end in [it].

	Singular	Plural
"water"	[meq]	[megit]
"string"	[nimeq]	[nimegit]
"bird"	[yakulik]	[yakuligit]
"river"	[kuik]	[kuigit]
"meat"	[qimik]	[qimigit]

In order to explain the occurrence of the high front vowel [i] in the plural forms of the fricative stem class we must invoke a rule of vowel epenthesis.

	/mix/	/mix+t/
Despirantization	miq	-
Epenthesis	-	mix+i+t
Lenition	-	mig+i+t
V Lowering	meq	meg+i+t
	[meq]	[megit]

The only rule that we have to add to our grammar in order to explain the forms of this class is vowel epenthesis. The reason why [i] is the epenthetic vowel and not [u] or [a] is not immediately obvious from our internal reconstruction, but a comparative study of the major dialects of Eskimo provides evidence that it is related to the process of vowel raising, cf. /pi+s+ta+t/ [pistit]. This development is discussed elsewhere (St. Clair, 1973 b).

As we have noted earlier the nouns which undergo syncope share many similarities with the fricative stem class of nouns.

	Singular	Plural
"name"	[ateq]	[atgit]
"floor"	[nateq]	[natgit]
"deceased"	[toquuɬeq]	[toquuɬit]

Hence, it is not surprising that they also share the same derivational histories of the fricative stem plurals, with the exception of syncopation in allegro speech.

	/atix/	/atix+t/
Despirantization	atiq	-
Epenthesis	-	atix+i+t
Lentition	-	atiɣ+i+t
V Lowering	ateq	ateɣ+i+t
Syncope	-	atɣ+i+t
	[ateq]	[atɣit]

VOWEL RAISING PLURALS

In our previous discussion of vowel raising we noted that geminate low vowels were raised to geminate high front vowels.

	/ata+a/	/ata+a+t/
V Raising	ati+i	ati+i+t
V Lowering	ate+e	-
	[atee]	[atiit]

Now we shall see that the plural forms of some words that end in [i] do not always undergo vowel epenthesis.

	Singular	Plural
"food"	[neqa]	[neqit]
"dog"	[qimuxta]	[qimuxtit]
"servant"	[pista]	[pistit]

Since these forms end in a vowel, they do not meet the structural description of the vowel epenthesis rule. Therefore, we must find some other explanation for their plural endings. The answer to this question is resolved when we realize that not only geminate vowels undergo vowel raising, but singular vowels also alternate between [a] and [i].

	/niqa/	/niqa+t/
V Raising	-	niqi+t
V Lowering	neqa	neqi+t
	[neqa]	[neqit]

The productiveness of this process of vowel raising is also evident in the nasal stem plurals.

NASAL STEM PLURALS

The nasal stem nouns are really a sub-class of the vowel raising stems. This is evident from the following data.

"her man"	/aŋuta+a/ [aŋutee]
"their man"	/aŋuta+a+t/ [aŋutiit]
"man"	/aŋuta/ [aŋun]
"men"	/aŋuta+t/ [aŋutit]

What these forms demonstrate is that the underlying form of the lexical item "man" has to be /aŋuta/, and as a consequence it belongs to the vowel stem class of nouns.

	/aŋuta+a/	/aŋuta+a+t/
V Raising	aŋuti+i	aŋuti+i+t
V Lowering	aŋute+e	-
	[aŋutee]	[aŋutiit]

One of the characteristics of this special sub-class of vowel stems is that it must delete its final vowel in the objective singular case.

	/aŋuta/	/aŋuta+t/
Apocope	aŋut	-
Nasalization[24]	aŋun	-
V Raising	-	aŋuti+t
	[aŋun]	[aŋutit]

The minor difference between the nouns of the vowel raising class and those of the nasal class is to be found in the rule of final vowel loss or apocope. The lexical form /aŋuta/ and the other members of the nasal class must undergo this rule, and this means that they must be marked by means of the diacritic feature [+vowel apocope]. This can be seen in the comparative derivations of [pista] and [aŋun]. The former does not apocopate, and the latter does.

	/pi+s+ta/	/aŋuta/
Apocope	-	aŋut
Nasalization[25]	-	aŋun
	[pista]	[aŋun]

It should be noted that the same lexical items which undergo singular vowel raising also undergo geminate vowel raising. This suggests that both rules can be conflated into one general rule of vowel raising.

	/aŋuta/	aŋuta+t/	/aŋuta+a+t/
Apocope	aŋut	-	-
Nasalization[26]	aŋun	-	-
V Raising	-	aŋuti+t	aŋuti+i+t
	[aŋun]	[aŋutit]	[aŋutiit]

CONSONANT DELETION STEM PLURALS

The non-possessive forms of the plural for the consonant deletion stems is exemplified by the following data.

	Singular	Plural
"seal oil"	[oqoq]	[oqut]
"skin"	[ameq]	[amit]
"people"	[yuk]	[yut]

These lexical items all end in underlying voiced stops which are subject to deletion in intervocalic position.

	/uqug/	/uqug+a/
C Devoicing	uquq	-
C Deletion	-	uqu+a
V Lowering	oqoq	oqu+a
	[oqoq]	[oqua]

When this final stop occurs before a consonantal suffix it may undergo several plausible derivations. One such derivation would involve a progressive assimilation of the stem final stop with that of the consonantal suffix, and this in turn would be followed by a rule of word final degemination.

	/uqug+t/
Assimilation	uqut+t
Degemination	uqut
Epenthesis[27]	-
V Lowering	oqut
	[oqut]

Although this derivation seems quite natural, it is difficult to motivate in Yupik Eskimo as there are no clear cases of assimilation and degemination for us to base our rules upon. A more economical solution would be to generalize the rule of consonant deletion so that stem final consonants are truncated before all suffixes.

	/amig/	/amig+a/	/amig+t/
C Devoicing	amiq	-	-
C Deletion	-	ami+a	ami+t
V Lowering	ameq	-	-
	[ameq]	[amia]	[amit]

Hence, it is clear from this derivation that the plural form /amiġ+t/ is subject to the general phonological processes of the language.

The following nouns were treated as a separate class by Hinz, but they also belong to the vowel raising class, and the consonant deletion noun class, i.e. they overlap in their phonological properties.

	Singular	Plural
"sky"	[qilak]	[qilit]
"large river"	[kuixpak]	[kuixpiit]
"wood"	[moġak]	[moġit]

The third person possessive forms of these nouns make it clear that they belong to the consonant deletion class.

"his wood"	/muxag+a/	[moġee]
"his woods"	/muxag+i/	[moġai]
"their wood"	/muxag+a+t/	[moġiit]
"their woods"	/muxag+i+t/	[moġait]

Hence, the singular forms undergo consonant devoicing, and the plural forms delete their stem final obstruents prior to vowel raising.

	/muxag/	/muxag+t/
C Devoicing	muxak	-
C Deletion	-	muxa+t
Lenition	muġak	muġa+t
V Raising[28]	-	muġi+t
V Lowering	moġak	moġi+t
	[moġak]	[moġit]

Prior to a conclusion of our reanalysis of the noun classes of Yupik Eskimo let us consider several pertinent facts about lexical stratification in this language.

LEXICAL STRATIFICATION

The need for special noun classes in our description of Yupik Eskimo may be due to several factors. On the one hand, it could be the result of lexical borrowing from other dialects or languages; and on the other hand, it could very well be due to the retention of vestigial forms which have heretofore resisted lexical restructuring. Hammerich (1952) was cognizant of this fact when he wrote the following.

> "Nearly all loan-words end in q or k. This is interesting because native Eskimo words of the language may end in a vowel. ... in most cases the loan-words have -aq."

If Hammerich is correct, then the noun classes in our study should form two basic classes.

NATIVE VOCABULARY

Vowel stems
Vowel raising stems
Nasal stems

NON-NATIVE VOCABULARY

Consonant deletion stems
Fricative stems

The following Russian loan words provide evidence that the consonant deletion stems can be classified as non-native vocabulary (cf. Hammerich, 1952).

	YUPIK ESKIMO	RUSSIAN
"rifle"	[kalapiinaq]	karabín
"skates"	[kankeextoq]	kon'kí (pl.)
"steel trap"	[kapkinaq]	kapkan
"white man"	[kasakaq]	kasák
"bread"	[kliipaq]	xleb
"cattle"	[kuluuvaq]	koróva
"soap"	[miilaq]	mílo

The importance of lexical stratification for our analysis is that it provides us with some insight into morphological phenomena. Some nouns are irregular because they retain patterns which are vestiges of the past. Others are irregular because they represent recent acquisitions to the lexicon. This distinction between the two kinds of irregularity is important because it would appear prima facie that the appeal to diacritic features is ad hoc. It is only when we expand our synchronic investigation to include the phenomena of borrowing and external reconstruction that we can begin to appreciate the fact that the use of diacritic features usually represent historical consequences.

SUMMATION OF THE REANALYSIS

Regularization of the data is of prime importance in a linguistic reanalysis. When Hinz (1944) established his eight noun classes in Yupik Eskimo, this was already a first step toward that goal. Our task has been to subject his original analysis to further scrutiny in the light of our own field work experience. As a consequence we have found that in lieu of eight noun classes there are basically two.

VOWEL STEMS

Regular vowel stems
Vowel raising stems

CONSONANT STEMS

Regular fricative stems
Regular consonant deletion stems

The syncope stems have been eliminated on the assumption that they are merely variants of the regular fricative stems.

This reanalysis captures several characteristics of Yupik Eskimo that were not discussed by Hinz. We have separated the lexicon into native and non-native vocabulary. The regular noun classes have been differentiated from the irregular classes, and what was once eight separate noun classes have been narrowed down to just two general classes of nouns in which the only exceptions to the major phonological processes can be found in the minor class of vowel raising stems. In addition to regularizing the data, we have independently motivated and substantiated the phonological processes of the language, and we have carefully presented the rationale for the abstract underlying forms of the language.

FOOTNOTES

*A preliminary version of this manuscript was read by David Dinneen, Robert Rankin, and James Hartmann of the University of Kansas. Their comments have been instrumental in the current revision. Dale Kinkade of the University of British Columbia has also provided innumerable insights which were based on his extensive experience with the native languages of North America. The data is based on the Kuskokwim dialect of Yupik Eskimo. My informants are from Bethel, Alaska and the research was conducted at the Haskell Junior Indian College in Lawrence, Kansas.

1. Hinz never discusses just what this rule might be, and hence it must be inferred from the data.

2. Eskimo is an ergative language, and this means that the object of a transitive sentence has the same case ending as the subject of an intransitive sentence. The terms "subjective" and "objective" were first used by Kleinschmidt (1851) and it has since been the subject of controversy (Rischel, 1971; Thalbitzer, 1930; Mey, 1969).

3. The word for "man" or "person" has been used as a shibboleth by Swadesh (1951) in separating the dialects of Western Eskimo (Yupik) from those of Eastern Eskimo (Inupik).

4. The word for "ocean" literally means "real sea." The formative [pik] means "real" or "genuine," and [imaq] means "sea." Another example of the use of the morpheme [pik] can be found in the word [yupik] which is composed of [yuk] "person" plus [pik] "real." Evidently the Eskimos considered themselves to be the original inhabitants of the earth.

5. Hinz assumes that the phonological processes of denasalization and epenthesis are both operative among the nouns of this class, but there is no motivation for this position.

6. Hinz was cognizant of the various constraints on this class of nouns, but he did not carry his analysis beyond that of a mere authoritative assessment of the facts. It is evident from the data that these alternations are conditioned by whether or not the syllable is checked.

7. The word [pista] is a compound lexical item. It is composed of the verb [pi] "to do" and the agentive marker [ta]. The appearance of the sibilant [s] in [pista] remains unanalyzed at this stage of our investigation.

8. This is also a compound form. It consists of [qimuk] "pull or drag," and [ta] which is an agentive marker. Hence, [qimuxta] "dog" is the animal which pulls or drags a sled.

9. It is assumed by Hinz that the endings of the dual, plural and the subjective singular already contain the high front vowel [i] in its

10. The word [qa] means "to speak" and the bound morpheme [neq] is an abstract noun marker which is equivalent to the "th" in English "warmth" or the "ness" in "happiness."

11. The fact that the nouns of this class share the same function as those of class five is not commented upon by Hinz. He repeated the same rules separately for each class, and did not deem it necessary to coalesce uvular and velar obstruent stems into the same class. He could have simplified his own analysis by eliminating one noun class entirely.

12. Again there is a conflict between the endings [im], [ik], and [it] in the nouns of this class and the endings [m], [k], and [t] of the first four classes.

13. This word is composed of /ata/ "father" + /nix̣/ "abstract noun marker." The underlying forms are given without explication. The rationale which led to their establishment will be given in our subsequent reanalysis of the Yupik nouns.

14. Both of these rules are unordered with respect to each other.

15. The rules of vowel lowering and consonant deletion are extrinsically ordered. They provide counter evidence to the claim that all such rules are unordered (Lehmann, 1972; Koutsoudas, 1972). This claim may be valid for syntax, but this does not necessarily mean that it should also hold in the realm of phonology (Bazell, 1952).

16. Another way of accomplishing this same effect is to conflate geminate vowels into a unit which is marked for length, i.e. [+long]. This would obviate the need for a rule of geminate vowel lowering, and accomplish the same effect that Pyle's proposed convention of segmental length would have for Greenlandic Eskimo (Pyle, 1971).

17. It should be obvious from this example that we are dealing with alienable possession in this paradigm. There is a special third person suffix for inalienable possession in Eskimo, viz. /ni/. Hence, "his own mouth" is realized phonetically as [qanine] and it is derived from an underlying form /qa+nix̣+ni/.

18. These forms demonstrate that the rule of vowel lowering before uvulars is not restricted to uvular stops, but also applied to uvular fricatives.

19. My informants presented me with both forms. The syncopated form occurs in fast speech. In the description by Hinz (1944) only syncopated forms were cited.

20. The form [aŋiax̣] "boat" is a fricative noun. The form [pak] "large" is derived from an underlying /pag/ and it is this form which displays the characteristics of the vowel raising nouns.

21. The plural is derived from an underlying /aŋiaχ+pag+t/. The alternation of [a] with [i] in [-pak]/[-piit] will be discussed later. What is important at this point is the process of vowel lengthening. Not all consonant deletion nouns share this feature.

22. Our informants admitted to hearing some speakers use the form [nuniit] in lieu of [nuneet]. We do not have enough information at the present time to discern the dialectal or social nature of this variation.

23. cf. footnote 7.

24. As previously noted, this rule operates on stem final voiceless stops. It is for this reason that the stem final stops of the plural are not nasalized. In order to prevent such forms as [ateq] "name" and [meq] "water" from nasalizing their final obstruents, this rule must be ordered prior to that of despirantization.

25. Nasalization is intrinsically ordered with respect to vowel apocope.

26. This rule is constrained to apply in word final position. If this constraint were not imposed it would incorrectly nasalize the final voiceless stops of the plural marker.

27. Epenthesis would have to be ordered after degemination in order to prevent such incorrect forms as *[oquit] and *[yuit] for [oqut] and [yut] respectively. Note that the reverse order occurs in Greenlandic, viz. [inuk] "man" [inuit] "men."

28. The singular form does not participate in vowel raising because this rule operates in the context of a morpheme boundary.

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